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L11: Entry 9 of 35

File: USPT

Mar 9, 1999

US-PAT-NO: 5881321

DOCUMENT-IDENTIFIER: US 5881321 A

TITLE: Camera motion sensing system

DATE-ISSUED: March 9, 1999

## INVENTOR-INFORMATION:

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US-CL-CURRENT: 396/53; 348/61, 352/131, 352/85, 396/429

## CLAIMS:

What is claimed:

1. A system for detecting the position of a camera comprising:  
a camera having a plurality of inertial sensors which respectively generate output signals indicative of movement of the camera in six directions of movement;  
a processing unit for processing the output signals generated by said inertial sensors to provide position information pertaining to the instantaneous location and orientation of the camera;  
a wireless communication device for transmitting position-related data based upon the output signals generated by said inertial sensors from the camera to a remote site;  
means for associating a time reference with the position information provided by said processing unit; and  
a memory unit for storing said position information and associated time reference at said remote site.
2. The system of claim 1 wherein said associating means is located in said camera, and said wireless communication device transmits time reference data together with said position related data.
3. The system of claim 1 wherein said associating means is located at said remote site.
4. The system of claim 1 wherein said inertial sensors comprise at least three accelerometers for respectively sensing linear movement of said camera along three orthogonal axes, and at least three gyroscopes for respectively sensing rotational movement of said camera about three orthogonal axes.
5. The system of claim 1 wherein said wireless communication device also transmits data relating to an operating parameter of said camera, together with said position-related data.
6. The system of claim 5 wherein said operating parameter is the focal length of a lens on the camera.
7. The system of claim 5 wherein said operating parameter is the focal distance.
8. The system of claim 5 wherein said operating parameter is an aperture value for the camera.
9. The system of claim 5 wherein said operating parameter is temperature.
10. The system of claim 1 wherein said processing unit is located at said remote site, and said position related data includes the output signals from said inertial sensors.
11. The system of claim 1 wherein said processing unit is located on the camera, and said position-related data comprises said position information.
12. The system of claim 1 comprising at least two inertial sensors for each of

said six directions of movement.

13. The system of claim 12 wherein the two sensors for sensing a given direction of movement are of the same type, and said information is based on an average of their respective output signals.

14. The system of claim 12 wherein the two sensors for sensing a direction of movement are of different types.

15. A system for detecting the position of a camera comprising:

a camera having a plurality of inertial sensors mounted thereon which respectively generate output signals indicative of linear movement of the camera along three orthogonal axes and rotational movement of the camera about three orthogonal axes;

a processing unit for processing the output signals generated by said inertial sensors to provide information pertaining to the instantaneous position and orientation of the camera;

a wireless communication device for transmitting position-related data based on the output signals generated by said inertial sensors from the camera to a remote site, and additional data relating to an operating parameter of said camera; and

a memory unit at said remote site for storing said position information.

16. The system of claim 15 wherein said inertial sensors comprise at least three accelerometers for respectively sensing said linear movement of said camera along three orthogonal axes, and at least three gyroscopes for respectively sensing said rotational movement of said camera about three orthogonal axes.

17. The system of claim 15 wherein said operating parameter is the focal length of a lens on the camera.

18. The system of claim 15 wherein said operating parameter is the focal distance.

19. The system of claim 15 wherein said operating parameter is an aperture value for the camera.

20. The system of claim 15 wherein said operating parameter is temperature.

21. The system of claim 15 wherein said processing unit is located at said remote site, and said position related data includes the output signals from said inertial sensors.

22. The system of claim 15 wherein said processing unit is located on the camera, and said position-related data comprises said information pertaining to the instantaneous position and orientation of the camera.

23. The system of claim 15 comprising at least two inertial sensors for each of said directions of movement along and about said axes.

24. The system of claim 23 wherein the two sensors for sensing a given direction of movement are of the same type, and said information is based on an average of their respective output signals.

25. The system of claim 23 wherein the two sensors for sensing a direction of movement are of different types.

26. A system for facilitating the creation of special effects, comprising:

a camera having a plurality of inertial sensors mounted thereon which respectively generate output signals indicative of linear movement of the camera along three orthogonal axes and rotational movement of the camera about three orthogonal axes;

a processing unit for processing the output signals generated by said inertial sensors to provide information pertaining to the instantaneous position and orientation of the camera;

a wireless communication device for transmitting position-related data based upon the output signals generated by said inertial sensors from the camera to a remote site; and

an image generating unit which receives said position information and generates a graphic image having a view angle which corresponds to said position and orientation information.

27. The system of claim 26 wherein said wireless communication device also transmits data relating to the focal length of a lens of said camera, together with said position-related data, and said image generating unit generates said graphic image at a magnification factor corresponding to said focal length.

28. The system of claim 26 wherein said processing unit is located at said remote site, and said position related data includes the output signals from said inertial sensors.

29. The system of claim 26 wherein said processing unit is located on the camera, and said position-related data comprises said position and orientation information.

30. The system of claim 26 wherein said inertial sensors comprise at least